

What is claimed is:

1. An optical fiber array comprising a plurality of optical-fiber bare fibers which are disposed in
5 alignment between two opposing plate members and are optically connected to connection elements in an end-to-end facing arrangement with each other, wherein;
the optical-fiber bare fibers are disposed in contact with a flat surface of one plate member A, an
10 adjustment layer formed of an adhesive is interposed between another plate member B and the plate member A, where a flat surface of the plate member B on its side opposite to the adjustment layer serves as a disposition standard surface when the array is set in; and
15 the adjustment layer, which fulfills conditions of $(d_{\max} + r) < H$ where the desired preset distance from i) a central line of the optical-fiber bare fibers which is formed by connecting central points of end cross sections in the optical-fiber bare fibers disposed in alignment to
20 ii) the disposition standard surface is represented by H, the maximum value of the thickness dimension in the plate member B by d_{\max} , and the radius of the end cross sections of the respective optical-fiber bare fibers by r, compensates a deviation from the preset distance H that
25 is caused by a non-uniformity in thickness dimension in

the plate member B, whereby the distance from the central points of the respective optical-fiber bare fibers to the disposition standard surface is set identical or substantially identical to the preset distance H.

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2. The optical fiber array according to claim 1, wherein said adjustment layer comprises a mixture of a resin and an inorganic filler.

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3. The optical fiber array according to claim 2, wherein said resin is a cured product of a light-curable resin.

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4. The optical fiber array according to any one of claims 1 to 3, wherein the distance from the central points of the respective optical-fiber bare fibers to the disposition standard surface has an accuracy of $\pm 5 \mu\text{m}$ or less in respect to the desired preset distance H.

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5. The optical fiber array according to any one of claims 1 to 3, wherein the horizontal distance W between one lateral surface of at least one of the plate member-A and the plate member-B and the central point of an end cross section of an arbitrary optical-fiber bare fiber

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has an accuracy of $\pm 5 \mu\text{m}$ or less in respect to the

desired preset value.

6. A method for manufacturing an optical fiber array comprising a plurality of optical-fiber bare fibers which are disposed in alignment between two opposing plate members and are optically connected to connection elements in an end-to-end facing arrangement with each other; the method comprising the steps of:

fixing respective optical-fiber bare fibers held in rows of V grooves of an optical-fiber bare fiber alignment guide, onto a flat surface of a plate member A to form a fixed member consisting of the plate member A and a plurality of optical-fiber bare fibers;

adjusting the posture of at least one of the fixed member and a predetermined standard plane while bringing the respective outer peripheral surfaces of the optical-fiber bare fibers fixed to the flat surface of the plate member A, into contact with the standard plane, to ensure the parallelism between i) a central line of the optical-fiber bare fibers which is formed by connecting central points of end cross sections of the optical-fiber bare fibers in the fixed member and ii) the standard plane, and to set to zero the vertical distance between i) the respective outer peripheral surfaces of the optical-fiber bare fibers kept in contact with the

standard plane and ii) the standard plane;

separating the fixed member and the standard plane
by a stated distance while maintaining the parallelism
between the central line of the optical-fiber bare fibers
5 in the fixed member and the standard plane, and
thereafter disposing another plate member B on the
standard plane;

making the fixed member and the standard plane
close by a stated distance while maintaining the
10 parallelism between the central line of the optical-fiber
bare fibers in the fixed member and the standard plane,
and thereafter joining the plate member B disposed on the
standard plane and the plate member A of the fixed member
in the state an adhesive is interposed between them; and

15 curing the adhesive to form an adjustment layer to
set the distance from the central points of the
respective optical-fiber bare fibers to the disposition
standard surface identical or substantially identical to
the preset distance H; the adjustment layer fulfilling
20 conditions of $(d_{\max} + r) < H$ where the desired preset
distance from the central line of the optical-fiber bare
fibers to the standard plane is represented by H, the
maximum value of the thickness dimension in the plate
member B by d_{\max} , and the radius of the end cross
25 sections of the respective optical-fiber bare fibers by r.

7. The optical fiber array manufacturing method according to claim 6, wherein said optical-fiber bare fiber alignment guide is so disposed that the horizontal distance between a row of the V-grooves and one lateral surface of the plate member A comes to be a stated value, and the respective optical-fiber bare fibers held in the V grooves of this optical-fiber bare fiber alignment guide are fixed onto the flat surface of the plate member A to form the fixed member consisting of the plate member A and the optical-fiber bare fibers.

8. The optical fiber array manufacturing method according to claim 6 or 7, wherein the horizontal distance between one lateral surface of the plate member B disposed on the standard plane and one lateral surface of the plate member A in the fixed member is adjusted to come to be a stated value, then the plate member B and the plate member A of the fixed member are joined in the state the adhesive is interposed between them, and thereafter the adhesive is cured.